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flight of flying fishes; the affinities of the fossil *Platysomidae* and *Palæoniscidae*, and of *Pleuracanthus*; and the sexes of eels. Among new discoveries are noted two species of *Pleuronectidae* (in the sense given to the term by Dr. Gill) without pectorals upon the blind side; the genera *Icesteus* and *Ichichthys*, curious soft-boned California fishes, which have been constituted a "family" by Professor Jordan; *Lopholatilus*, a new economical fish; the Rock-fish of California, and a deep-sea *Sebastes* found off Inosima, Japan.

The activity of ornithologists has produced numerous faunistic works, notably upon the birds of Papua and the adjacent islands, and several families have been monographed. After notes upon the *Odontornithes*, *Archæopteryx*, and the extinct parrot of Bourbon, Dr. Gill turns to the mammals, commencing, as in other groups, by enumerating the features of progress. Then follow a condensation of the views of various naturalists on the progenitors of mammals; a synopsis of Marsh's work on Jurassic Mammals; notes on the discovery of new *Monotremes* and *Marsupials* in New Guinea; on a plague of rats which occurs in Parana (Brazil) at intervals of thirty years; on the habitat of *Lophiomys imhausi*; on the gestation of the elephant and length of life of the hippopotamus; and lastly, a short account of Professor Cope's articles upon the extinct cat-like animals of America and the relations of the horizons of extinct *Vertebrata* in Europe and in North America.

Dr. Gill utters a warning, by no means without reason, against the use of the word "order" to define groups which have less value than the sub-orders of mammals, and is especially severe upon Dr. Sclater for the recognition of two sub-classes and twenty-six orders in the homogeneous class of Birds. It would be well for all systematists to remember the warning, and to remember also that the same criticisms apply to the undue multiplication of families and genera. Nor does our author neglect the opportunity of throwing another stone at Dr. Günther for the mistaken conservatism which impels that excellent ichthyologist to retain the Cuvierian orders of the Teleosts, to include sharks and Chimeroids in the same order, and in various other ways to ignore broad morphological facts.

THORELL'S SPIDERS OF MALAYSIA AND PAPUA.<sup>1</sup>—A third part of this extensive work has just been received. It forms a bulky and handsomely printed work of 720 pages, but without any plates. It forms volume XVII. of the *Annals of the Civic Museum at Genoa*, one of the most active scientific societies in Europe, and is another evidence of the scientific awakening now pervading the kingdom of Italy, and which is undoubtedly due largely to the freedom and political progress of the Italian nation resulting from the loss of the temporal power of the Pope. The collections which form the base of the present descriptions were those made

<sup>1</sup>*Studi sui Regni Malesi e Papuani.* Per T. THORELL. III. Genoa, 1881. 8vo.

by Professor O. Beccari at Amboina and by this explorer, who went in company with D'Albertis to New Guinea, together with collections from other parts of the Malay Archipelago. Dr. Thorell prefaces his work with valuable remarks on the geographical distribution of the spiders of this region and gives a full account of what has been done in the field by his predecessors.

THE DISTRIBUTION OF NORTH AMERICAN FRESH WATER MOLUSCA.<sup>1</sup>—Professor Wetherby's endeavor, in this interesting article, is to trace the causes which have led to the great differentiation of the fresh-water mollusks and to distinguish the various faunæ. The Limneidæ, circumpolar in their distribution, are most abundant in the lake region of the Archæan lands, and are essentially lacustrine, although a few are fluviatile. The Unionidæ are most abundant in the region drained by the Ohio, and the typical Ohio forms are continued across the Mississippi to the Rocky Mountains and southward to Texas, but in vastly diminished numbers. South of the Ohio and east of the Mississippi, both within and without the Ohio drainage, many of the Unionidæ are evidently closely related to Ohio types, but along with them, principally in small mountain streams, occur species which have a very different facies, and belong to a different fauna. Such are *U. spinosus* and *U. collinus*, the only spinous Uniones.

The Strepomatidæ first appear in New York, and are almost confined to the district occupied by the peculiar Unionidæ just mentioned. They do not cross the Mississippi, and are chiefly found in mountain streams.

The Unionid genus *Anodonta* is abundant with the Limneidæ of the Archæan lake regions, and plentiful over the northern part of the region occupied by the Uniones, but gives way southward to *Unio*. Most of the described species of *Anodonta* and *Unio* are mere varieties, and even Dr. Lea has to confess that he can find no satisfactory anatomical differences in the latter genus, yet there are many types that must be called species.

Reviewing these facts, Professor Wetherby concludes that the Limneidæ form the oldest fauna, and that the typical Ohio forms spread from the Palæozoic lands of the Northern States, and are older than those found in the Mesozoic and Tertiary regions of the South.

These latter he refers to a Palæozoic ancestor whose home was in the western archæan region.

All fresh-water mollusks were originally lacustrine, adapted themselves first to the change from salt to fresh water, and afterwards to the more rapid change caused by the elevation of mountain ranges, and the conversion of lakes into flowing water. Hence the most striking and peculiar forms are found in the mountain streams of newer regions and have not yet had time to

<sup>1</sup>On the Geographical Distribution of Certain Fresh Water Mollusks of North America. By A. G. WETHERBY, A. M. Jour. Cincin. Soc. Nat. Hist., July, 1881.